



National Park Service  
U.S. Department of the Interior  
Timpanogos Cave National Park

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## Finding of No Significant Impact Cave Camp Springs

### Background

In compliance with the National Environmental Policy Act, the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine the proposed improvements to the American Fork culinary spring collection system (Cave Camp Spring) located within the boundaries of the Timpanogos Cave National Monument. This water collection system is approximately 80 years old and no longer effectively collects the spring water, mostly due to the incursion of vegetative roots, siltation and debris, and other obstructions. These root incursions also provide a direct conduit for potential surface water contamination into the spring collection system. Additionally, over time, portions of the piped system that run alongside the American Fork River have become exposed through erosion, thereby making them more vulnerable to damage and potential contamination. Further, the spring collection system is out of compliance with current Utah Division of Drinking Water (UDDW) regulations for culinary water sources.

The proposal is to rehabilitate the spring collection system and delivery systems by implementing necessary improvements needed to maintain a safe drinking water supply for American Fork City and comply with Utah Division of Drinking Water (UDDW) standards for culinary water sources, while preserving park resources and values by minimizing impacts to the Timpanogos Cave Monument, including the Timpanogos Cave Historic District. The objectives of the project are to:

- Protect the public health and safety by providing for a safe and reliable drinking water supply for American Fork City
- Protect and preserve park resources and values
- Comply with current UDDW standards for culinary water collection systems
- Reduce the potential for contamination of the drinking water supply due to vegetative incursions, siltation, pipe rupture, and other types of service disruptions
- Reduce the frequency and/or severity of seasonal inundation events during high spring runoff due to the inadequacies of the spring collection system in accommodating the water flow

### Selection of the Preferred Alternative

Alternative F is the NPS's preferred alternative because it best meets the purpose and need for the project, as well as the project objectives. Under Alternative F, rehabilitation of the culinary water spring collection system will consist of reconstruction of the spring collection system, including:

- Installation of a new outflow pipeline along the north side of the American Fork River
- Relocation of the main collection box/weir to the north side of the parking area near the hillside

- Excavation of the spring collection area and removal of the existing spring collection system
- Installation of new spring collection lines
- Installation of new access boxes that meet the UDDW requirements (including raised and locked hatches and air vents), including a new weir (control) box
- Installation of a new outflow pipeline
- Removal of deep-rooted vegetation to the extent necessary and the institution of certain testing protocols and routine root removal
- Restoration of the parking area and other surface improvements after construction

### **Mitigation Measures**

Mitigation measures have been included in the preferred alternative to prevent and/or minimize impacts during construction of the project, to be performed by the contractor unless otherwise specified. These measures are as follows:

- To minimize the amount of ground disturbance, staging and stockpiling areas will be in previously disturbed sites, away from visitor use areas to the extent possible. All staging and stockpiling areas will be returned to pre-construction conditions following construction.
- Construction zones will be identified and fenced with construction tape, snow fencing, or some similar material prior to any construction activity. The fencing will define the construction zone and confine activity to the minimum area required for construction. All protection measures will be clearly stated in the construction specifications and workers will be instructed to avoid conducting activities beyond the construction zone as defined by the construction zone fencing.
- Revegetation and re-contouring of disturbed areas will take place following construction and will be designed to minimize visual intrusion. Revegetation efforts will strive to reconstruct the natural spacing, abundance, and diversity of native plant species, using native species, to the extent possible in compliance with State drinking water standards. Weed control methods will be implemented to minimize the introduction of noxious weeds. Some deep-rooted vegetation (including trees and shrubs) may be removed, but other existing vegetation at the site will not be disturbed to the extent possible.
- Because disturbed soils are susceptible to erosion until revegetation takes place, standard erosion control measures such as silt fences and/or sand bags will be used to minimize any potential soil erosion.
- Fugitive dust generated by construction will be controlled by spraying water on the construction site, if necessary.
- To reduce noise and emissions, construction equipment will not be permitted to idle for long periods of time and will be maintained in good working condition.
- To minimize possible petrochemical leaks from construction equipment, the contractor will regularly monitor and check construction equipment to identify and repair any leaks.

- Should construction unearth previously undiscovered cultural resources, work will be stopped in the area of any discovery and the NPS will consult with the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP), as necessary, according to §36 CFR 800.13, Post Review Discoveries. In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) will be followed.
- If previously unknown archaeological resources are discovered during construction, all work in the immediate vicinity of the discovery will be halted until the resources could be identified and documented, and, if the resources cannot be preserved in situ, an appropriate mitigation strategy will be developed in consultation with the Utah SHPO and, as necessary, interested American Indian tribes. In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (25 USC §3001) of 1990 will be followed. If non-Indian remains are discovered, standards reporting procedures to the proper authorities will be followed, as will all applicable federal, state, and local laws.
- The NPS will ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging paleontological materials, archaeological sites, or historic properties. Contractors and subcontractors will also be instructed on procedures to follow in case previously unknown paleontological or archaeological resources are uncovered during construction. Contract provisions will require the cessation of construction activities in the event of a discovery until further notice.
- Construction workers and supervisors will be informed about the special sensitivity of the Monument's values, regulations, and appropriate housekeeping.
- Newly introduced visual elements will be camouflaged to the extent possible, using paint schemes/colors, rock facing, and other such techniques, to minimize the intrusion into the viewshed.
- All staging areas/stockpiling are required to be located away from visitor areas and historic sites.
- Best management practices (BMPs) will be implemented during construction to protect the integrity of the surface and ground water resources in the area from sedimentation and other contamination. After construction is completed, the area excavated for the installation of the spring collection system will be restored to its existing condition and the disturbed soils will be stabilized as needed to prevent any unnatural erosion from occurring.
- Construction activities will require a Stream Alteration permit to be obtained from the Utah Division of Water Resources (UDWR) for work below the ordinary high water (OWH) mark.
- **Memorandum of Agreement (MOA) mitigation measures:** The NPS shall ensure that the following measures are carried out:
  - *Archival Recordation/Documentation:* Prior to any construction activities the NPS will ensure that the following documentation standards are met:
    - The NPS will ensure that all recordation/documentation activities are performed or directly supervised by architects, historians, photographers, and/or other

professionals meeting the qualification standards in the Secretary of Interior's Professional Qualification Standards (36 CFR 61, Appendix A).

- The NPS will ensure that historic drawings of affected historic properties are either photographed or photocopied in standard sizes for ease of handling.
- The NPS will require that American Fork City, as a condition of their permit, provide appropriate historic documentation in regards to the history of the spring collection system, including its installation and its contributions to the growth and development of American Fork City.
- *Restoration of Stone Pathway and Wall*
  - The NPS will ensure that the stone pathway and retaining wall will be documented by NPS historic preservation specialists and restored utilizing masons who are appropriately trained in historic masonry, under the supervision of the NPS personnel trained historic masonry preservation.
  - The NPS will ensure that all reasonable attempts will be made to document each individual stone regarding placement and to return the stone to their original location using a historic mortar mixture.
- *Post-review discoveries:* If human remains or historic or prehistoric cultural resources are discovered during construction, activities shall immediately cease within the area of the discovery and the NPS will take steps necessary to protect the discovery of these resources. The NPS will require, as a term of its permit to American Fork City, that any such discovery be promptly reported to NPS Superintendent who will then notify and consult with SHPO within 48 hours regarding the appropriate treatment of the discovery. All construction personnel will be required to have cultural resource orientation training prior to working on the Project.
- The NPS will require that American Fork City, as a term of its permit, contract with a qualified archaeologist to provide training and monitoring as needed during construction of the Project that meet or exceeds the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738-44739).
- *Monitoring and reporting:* The NPS will provide a written report to SHPO on a monthly basis. The report will include:
  - Description of construction activities.
  - Monitoring results (if needed).
  - Itemized list of artifacts discovered or unearthed including:
    - A description of eligibility and historic significance
    - Photographs of each artifact
    - Map showing the location of discovery
    - Treatment plan

## **Alternatives Considered**

Two alternatives were evaluated in detail in the EA including the No Action Alternative and one build alternative. Under Alternative A (No Action Alternative), no improvements to the existing spring collection system will be undertaken and the existing water collection system will be abandoned.

Alternative F - Reroute Pipeline to North of River is the preferred alternative, as described in the previous section. There were five other build alternatives listed in the EA that were considered then dismissed as part of the alternatives analysis in Chapter 2.

### Environmentally Preferable Alternative

According to the CEQ regulations implementing NEPA (43 CFR 46.30), the environmentally preferable alternative is the alternative “that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources. The environmentally preferable alternative is identified upon consideration and weighing by the Responsible Official of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources. In some situations, such as when different alternatives impact different resources to different degrees, there may be more than one environmentally preferable alternative.”

The Environmentally Preferable Alternative is the No Action Alternative. It causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources. The No Action Alternative would maintain the status quo of the project area and would have no impacts to geologic resources, vegetation, cultural landscapes, historic structures, archaeological resources, or floodplains. There would be no direct impact on water quality in the area; however, the No Action Alternative would not alleviate the potential for contamination of American Fork City’s culinary water supply and would not meet the purpose and need for the project

### Why the Preferred Alternative Will Not Have a Significant Effect on the Human Environment

As defined in 40 CFR §1508.27, significance is determined by examining the context (including duration) of an impact, and its intensity, including a consideration of the criteria that follow. Based on the analysis in the EA, which is summarized in the following sections, the NPS has determined that the preferred alternative can be implemented without significant adverse effects. All impact threshold definitions referred to in this FONSI are defined in the EA.

- ***Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.***

Implementation of the preferred alternative will result in some adverse impacts; however, the overall benefit of the project to the protection of public health and safety outweighs the negative effects. The preferred alternative will ensure that the spring collection system can continue to be utilized to provide a safe drinking water supply to American Fork City. Further, the majority of the negative effects will be temporary and the impacts will be mitigated.

Environmental Resource	Impacts from the Preferred Alternative
Floodplains	Project will not impact the ability of the floodplain to convey floodwaters nor increase or enhance flooding potential.
Water Resources	BMPs will be implemented to prevent impacts to water quality during construction, with no long-term impacts to water quality.
Socioeconomic Resources	No adverse impacts to socioeconomic resources

Environmental Resource	Impacts from the Preferred Alternative
Historic Structures	Removal of the historic spring collection system and certain historic vegetation; temporary impacts to the stone pathway and stone retaining wall (to be removed and rebuilt in kind) and to the Cave Camp area (due to excavation for the new pipeline) and potential temporary impacts to the river channel wall (to be rebuilt if impacted).
Cultural Landscapes	Impacts to cultural landscape due to the removal of vegetation and the inclusion of new manholes above ground.
Archaeological Resources	Removal of the historic spring collection system; temporary impacts to the stone pathway and stone retaining wall (to be removed and rebuilt in kind) and to the Cave Camp area (due to excavation for the new pipeline) and potential temporary impacts to the river channel wall (to be rebuilt if impacted).
Geologic Resources	Temporary impacts to geologic resources during construction activities
Vegetation	Removal of selected deep-rooted vegetation; temporary impacts due to construction activities.

- ***The degree to which the proposed action affects public health or safety.***

The preferred alternative will have an overall beneficial effect on public health and safety due to the reduction of the potential for contamination and catastrophic failure of American Fork's culinary water system.

- ***Unique characteristics of the geographic area, such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.***

There are no prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas in the project area. Within the geographic area, there are cultural and historic resources; namely the Timpanogos Cave Historic District, which was listed on the NRHP in 1982 and includes several structures in the project area that are listed on the NRHP and on the NPS List of Classified Structures (LCS). As the project area is located within the confines of the Timpanogos National Monument and the Uintah-Wasatch National Forest and much of the project area is covered in asphalt and used as a parking lot. No farmland, wetlands, wild and scenic rivers or ecologically critical areas are present in the project area and was dismissed.

- ***The degree to which the effects on the quality of the human environment are likely to be highly controversial.***

Throughout the environmental process, the proposal to rehabilitate the culinary water spring collection system was not highly controversial for the public, nor are the effects expected to generate future public controversy. Further, during the public comment period, only three comments were received (one of which was duplicative). None of the comments expressed opposition to the project.

- ***The degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risks.***

The environmental process has not identified any effects that may involve highly unique or unknown risks. The impacts of the preferred alternative are not atypical of a project of this type within close proximity to a cultural resource and the mitigation measures to be employed are straightforward and fairly standard.

- ***The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.***

The preferred alternative is not expected to set a precedent for future actions with significant effects, nor does it represent a decision in principle about a future consideration. The mitigation measures for the impacts to cultural resources are widely accepted restoration management practices under NPS policies.

- ***Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.***

Cumulative effects were analyzed in the EA and no significant cumulative impacts were identified.

- ***The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.***

The preferred alternative will have adverse impacts on certain unique characteristics of the area; namely, cultural and archaeological resources and cultural landscapes. During construction, there will be impacts to several features located in the spring collection area. These include:

1. The stone pathway to the residence
2. Stone retaining walls surrounding the residence
3. Potential impacts to stone retaining walls along the river.

The stone pathway and the stone retaining wall will be removed during construction and rebuilt in the same location and using historic preservation techniques. There may also be a minor impact to the river channel walls near the western end, depending upon where the new pipeline crosses over the American Fork River. In the event that the walls are impacted, they will be rebuilt after construction. For the pipeline installation, there will be minor, temporary impact impacts to the Cave Camp area due to the excavation required to bury the new pipeline from the American Fork River to the access road and thence to SR-92. The disturbed ground will be restored to its original condition after construction. Potential mitigation measures that will reduce the impacts on historic resources include the replacement of the stone wall and stone pathway in place, using appropriate methods and materials to restore those resources to their original condition.

The preferred alternative will have an overall adverse effect to cultural resources that are either listed on or eligible for listing in the National Register of Historic Places; however, an MOA has been reached to minimize or mitigate impacts to those resources. Mitigation measures include archival recordation of the cultural/archaeological resources that will be adversely affected by the preferred alternative and restoration of the stone pathway and retaining wall after construction of the project is completed.

The cultural landscape will be impacted due to the removal of certain historic vegetation and the inclusion of new manholes as part of the new spring collection system. The project will also have an impact on the historic vegetation patterns due to the removal of certain deep-rooted vegetation in the source protection zone. Those plants currently located within said area that are classified as deep-rooted will be removed and not replaced (anticipated to be approximately three to five trees); however, those plants that are classified as shallow-rooted will remain, including the white fir located on the front lawn of the historic Superintendent's house. Only a few trees will be removed and not those that are most critical to the look and feel of the Timpanogos Cave Historic District. While these impacts will alter the features of the cultural landscape, they will not diminish the integrity of the site so as to jeopardize its eligibility status for the National Register of Historic Places. Mitigation measures will include visual treatments on the manholes to be as minimally invasive as possible and revegetation with native vegetation that is compatible with UDDW standards. A Memorandum of Agreement was written by the National Park Service and signed by the park, American Fork City, and concurred by the Utah SHPO on March 18, 2015.

- ***The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.***

According to the USFWS' Endangered Species List for the project area, obtained from the online Information, Planning, and Conservation (IPaC) system on April 25, 2014 (Consultation Tracking Number 06E23000-2014-SLI-0195), the following species were listed as being potentially present:

- Greater sage-grouse (*Centrocercus urophasianus*)
- Yellow-billed cuckoo (*Coccyzus americanus*)
- June sucker (*Chasmistes liorus*)
- Least chub (*Notichthys plegethontis*)
- Ute ladies'-tresses (*Spiranthes diluvialis*)
- Canada lynx (*Lynx canadensis*)

There is no designated critical habitat or suitable habitat for the greater sage-grouse, the yellow-billed cuckoo or Ute ladies'-tresses in the project area. Potential habitat may exist for the Canada lynx; however, due to the limited nature of the preferred alternative and the common presence of humans at the project site, it is unlikely that the preferred alternative will have any effect on the Canada lynx. As for the aquatic species of June sucker and least chub, there are no known populations in the American Fork River, nor will the preferred alternative result in the degradation of water quality.

The NPS determined that the project will have no effect on federal or state threatened and endangered species. Information regarding threatened and endangered species was obtained from the Utah Natural Heritage Program of the Utah Division of Wildlife Resources on March 21, 2014.

- ***Whether the action threatens a violation of Federal, State or local law or requirements imposed for the protection of the environment.***

The action will not violate any Federal, State, or local laws or environmental protection laws.

### **Public Involvement**

The EA was made available for public review and comment during a 30-day period ending February 28, 2014. To notify the public of this review period, notices were sent to stakeholders and interested parties and an announcement was posted on the NPS PEPC website. Copies of the document were available to the public at local repositories and on the NPS PEPC website as well.

A total of three (3) comments were received (with one being duplicative), all from private individuals. There were no substantive comments and no opposition to the preferred alternative was expressed. One commenter asked for impacts resulting from restoration. Another commenter questioned the projects desire to retain the parking lot. These were addressed in the Comment and Response section on page 10.

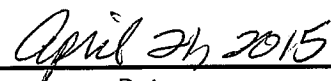
### **Conclusion**

As described above, the preferred alternative does not constitute an action meeting the criteria that normally require preparation of an environmental impact statement (EIS). The preferred alternative will not have a significant effect on the human environment. Environmental impacts that could occur are limited in context and intensity, with adverse impacts that range from negligible to moderate. There are no unmitigated adverse effects on public health, public safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence were identified. Implementation of the preferred alternative will not violate federal, state or local environmental protection law.

Based on the foregoing, the National Park Service has determined that an EIS is not required for this project and thus will not be prepared.

Approved:

  
 for Sue E. Masica  
 Regional Director, Intermountain Region  
 National Park Service

  
 Date

## Comments and Responses

**Comment:** One commenter requested information on what environmental impacts the restoration will have on the current site and its effects on the surrounding water sheds and ecosystems.

**Response:** The preferred alternative will have temporary impacts to the surrounding water sheds and ecosystems due to construction activities; however, once construction is completed, the site will be restored to its original condition, including revegetation with native plants that are in conformity with UDDW standards. There will be no long-term permanent impacts on the watershed or the surrounding ecosystems.

**Comment:** One commenter expressed a concern that the parking lot was being retained as part of the preferred alternative. The commenter felt that the parking lot was neither historic nor necessary operations.

**Response:** The parking lot is both part of the historic district that is already listed on the National Register of Historic Places and is necessary to the NPS use of the site for its management.

## Appendix A – Non-Impairment Finding

The National Park Service's Management Policies, 2006 require analysis of potential effects to determine whether or not actions will impair park resources. The fundamental purpose of the national park system (established by the National Park Service Organic Act of 1916 and reaffirmed by the NPS General Authorities Act on 1970, as amended) begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values.

However, the laws do give the NPS the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the NPS the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise.

Impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values.

An impact to any park resource or value may, but does not necessarily, constitute impairment. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park; or
- Identified as a goal in the park's general management plan or other relevant NPS planning documents.

An impact would be less likely to constitute impairment if it is an unavoidable result of an action necessary to pursue or restore the integrity of park resources or values and it cannot reasonably be further mitigated.

The park resources and values that are subject to the no-impairment standard include:

- The park's scenery, natural and historic objects, wildlife, and the processes and conditions that sustain them, including (to the extent present in the park) the ecological, biological and physical processes that created the park and continue to act upon it; scenic features; natural visibility (both in daytime and at night); natural landscapes; natural soundscapes and smells; water and air resources; soils, geological resources; paleontological resources; archaeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals;
- Appropriate opportunities to experience enjoyment of the above referenced resources, to the extent that can be done without impairment;

- The park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system and the benefit and inspiration provided to the American people by the national park system; and
- Any additional attributes encompassed by the specific values and purposes for which the park was established.

Impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. The NPS's threshold for considering whether there could be impairment is based on whether an action will have significant effects.

Impairment findings are not necessary for socioeconomic resources because impairment findings relate back to park resources and values and this impact area is not generally considered a park resource or value according to the Organic Act and cannot be impaired in the same way that an action can impair park resources and values. After dismissing this topic (as well as those topics previously dismissed in the EA), the topics remaining to be evaluated for impairment include:

- Floodplains
- Water Resources
- Cultural Resources (Historic Structures, Archaeological Resources, and Cultural Landscapes)
- Geologic Resources
- Vegetation

#### Floodplains

Under the preferred alternative, the spring collection system will be upgraded, which will include better protection measures against potential contamination due to flood waters entering the system. These protections will include collection boxes that are raised at least 18 inches above the ground, with air vents. These new structures will be within the 100-year floodplain, but will be located within previously disturbed areas within the Cave Camp parking lot. Although they will displace water within the floodplain during inundation events, they will not impact the ability of the floodplain to convey floodwaters, nor increase or enhance flooding potential. Although the preferred alternative will have adverse long-term impacts to floodplains, the impact will be negligible; therefore, there will be no impairment to floodplains.

#### Water Resources

The preferred alternative will help preserve the water quality of the spring with water quality parameters within the standards for its designated use by protecting the spring collection area in accordance with UDDW standards, which will have a long-term, beneficial impact to water resources in the area.

The preferred alternative will involve construction activities, which have the potential to impact surface waters in the area; however, best management practices (BMPs) will be implemented during construction to protect the integrity of the surface and ground water resources in the area from sedimentation and other contamination. The construction activities will also result in temporary impacts to the American Fork River from the installation of the new pipeline. Construction activities will include trenching across the river from north to south, using cofferdams to control the water during excavation. Such construction activities will require a Stream Alteration permit to be

obtained from the Utah Division of Water Resources (UDWR) for work below the ordinary high water (OWH) mark.

Based upon the beneficial impact on water resources and due to the implementation of BMPs to protect the integrity of the American Fork River during construction, there will be no impairment to water resources.

#### Cultural Resources

The preferred alternative will have an overall adverse effect to cultural resources that are either listed on or eligible for listing in the National Register of Historic Places; however, an MOA has been reached to minimize or mitigate impacts to those resources. Mitigation measures include archival recordation of the cultural/archaeological resources that will be adversely affected by the preferred alternative and restoration of the stone pathway and retaining wall after construction of the project is completed. Due to the mitigation measures incorporated into the MOA, there will be no impairment of cultural resources.

#### Geologic Resources

The preferred alternative will require construction activities that will impact geologic resources and soils in the project area on a temporary basis during construction. Construction activities will also result in the removal of certain soils, etc. from the project area; however, it will not affect any geologic structures. After construction is completed, the area excavated for the installation of the spring collection system will be restored to its existing condition and the disturbed soils will be stabilized as needed to prevent any unnatural erosion from occurring.

The preferred alternative will have a minor to moderate, short-term, adverse impact to geologic resources in the project area during construction due to excavation activities, but will result in a negligible to minor, long-term, adverse impact after construction due to the restoration of the site. Therefore, there will be no impairment of geologic resources.

#### Vegetation

NPS Management Policies state that parks will maintain all plants native to park ecosystems and that invasive non-native species will not be allowed to displace native species if that can be prevented. Although the preferred alternative will entail excavation in the project area, excavation activities will be temporary and limited with the area being restored to its current condition after construction, including slope stabilization measures. Mitigation measures will be implemented during construction to minimize the establishment of exotic plant and noxious weeds. Revegetation and re-contouring of disturbed areas will take place following construction and will be designed to minimize visual intrusion. Revegetation efforts will strive to reconstruct the natural spacing, abundance, and diversity of native plant species, using native species, to the extent possible in compliance with State drinking water standards. Weed control methods will be implemented to minimize the introduction of noxious weeds. Also, certain trees considered by the NPS to be shallow-rooted and important to the historic setting and feel of the Timpanogos Cave Historic District will be maintained.

The impact to the particular plant community of the removal of vegetation for construction and water protection purposes will be long-term and adverse due to the removal of certain trees, but overall, the project will have a minor impact to vegetation due to the small localized size of the disturbance area. Further, the vegetation that will be removed is of a relatively common variety and is present throughout the American Fork Canyon. Therefore, there will be no impairment to vegetation.

**Conclusion**

In conclusion, as guided by this analysis, good science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities, it is the Superintendent's professional judgement that there will be no impairment of park resources and values from implementation of the preferred alternative.